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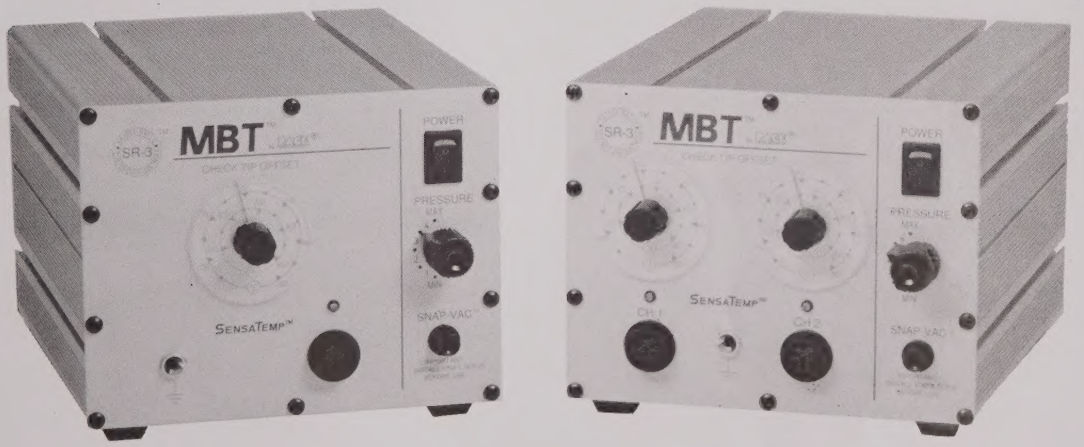
PACE®
INCORPORATED

MBT 201, MBT 101 SYSTEMS



SYSTEM OPERATION

& MAINTENANCE

MANUAL

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INCORPORATED
Systems for Development, Production and Repair of Electronic Assemblies

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Mini-Wave

Since 1958, PACE Incorporated has provided advanced technology training in all aspects of hand soldering, rework and repair.

Additional copies of this manual or other PACE literature may be obtained from:

PACE Incorporated (301) 490 - 9860
Sales Administration (301) 498 - 3252 Fax
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GENERAL INFORMATION

INTRODUCTION

The MBT 201 and MBT 101 Universal Soldering/Desoldering Systems provide the user with the power and versatility to remove and install SMD and Thru-Hole devices. The power source incorporates a highly responsive SensaTemp (closed-loop) temperature control system which provides power to the two output channels on the MBT 201 systems and to a single output channel on the MBT 101 systems. Accessory handpieces (standard & optional) and special use tips allow the user to remove and replace a wide variety of surface mount components.

Virtually all of today's specialized handpieces with large SMD tips suffer from a problem in which the actual tip temperature that the work sees can be more than 100°F cooler than the Set Tip Temperature on the Variable Temperature Control. The systems feature PACE's unique Tip & Temperature Selection System which allows the user to set the true temperaure desired for any size and type of tip or handpiece.

The MBT 101 and MBT 201 systems are available in either the 115 VAC version, 100 VAC version or 230 VAC version. The systems package the power source with a selection of accessories and functional aids. These systems are as follows.

GENERAL INFORMATION

MBT 101 SYSTEM - Consists of PPS 75 (115 VAC, 60 Hz Version) Power Source, SX-70 Sodr-X-Tractor, SX Tip & Tool Stand, Tip & Temperature Selection System Charts and Accessory Kit.

MBT 101J SYSTEM - Consists of PPS 75J (100 VAC, 50/60 Hz Version) Power Source, SX-70 Sodr-X-Tractor, SX Tip & Tool Stand, Tip & Temperature Selection System Charts and Accessory Kit.

MBT 101E SYSTEM - Consists of PPS 75E (230 VAC, 50 Hz Version) Power Source, SX-70 Sodr-X-Tractor, Handpiece Cubby, Tip & Temperature Selection System Charts and Accessory Kit.

MBT 201 SYSTEM - Consists of PPS 80 (115 VAC, 60 Hz Version) Power Source, SP-2 Sodr-Pen Soldering Iron, SX-70 Sodr-X-Tractor, SX & SP Tip & Tool Stands, Tip & Temperature Selection System Charts and Accessory Kit.

MBT 201J SYSTEM - Consists of PPS 80J (100 VAC, 50/60 Hz Version) Power Source, SP-2 Sodr-Pen Soldering Iron, SX-70 Sodr-X-Tractor, SX & SP Tip & Tool Stands, Tip & Temperature Selection System Charts and Accessory Kit.

MBT 201E SYSTEM - Consists of PPS 80E (230 VAC, 50 Hz Version) Power Source, SP-2 Sodr-Pen Soldering Iron, SX-70 Sodr-X-Tractor, SX & SP Tip & Tool Stands, Tip & Temperature Selection System Charts and Accessory Kit.

PETS 5A, 5AE SYSTEMS - PACE Educational Systems containing everything required for step-by-step training in high reliability soldering & desoldering. Consists of MBT 201 or MBT 201E systems plus instructional Videos, Manuals & Skills Kits.

The SR-3 "Safety Rated" designation on the front panel is your assurance that the MBT 101/J/E and MBT 201/J/E systems: Meet all applicable EOS/ESD, temperature stability and other government and industry specification requirements (including MIL-STD-2000A); contain PACE's unique SensaTemp temperature management system for high performance and safety, plus a Tip Offset Compensation feature for superior thermal process control.

SPECIFICATIONS

POWER REQUIREMENTS

PPS 75 (MBT 101 System)	-	Version operates on 97-127 VAC, 50/60 Hz. 86 Watts, 0.75 Amp typical; 120 Watts, 1.0 Amp maximum
PPS 75J (MBT 101J System)	-	Version operates on 90-115 VAC, 50/60 Hz. 86 Watts, 0.86 Amp typical; 120 Watts, 1.2 Amp maximum
PPS 75E (MBT 101E System)	-	Version operates on 196-264 VAC, 50 Hz. 86 Watts, 0.44 Amp typical; 100 Watts, 0.55 Amp maximum
PPS 80 (MBT 201 System)	-	Version operates on 97-127 VAC, 50/60 Hz. 138 Watts, 1.2 Amp typical; 184 Watts, 1.6 Amp maximum
PPS 80J (MBT 201J System)	-	Version operates on 90-115 VAC, 50/60 Hz. 138 Watts, 1.4 Amp typical; 184 Watts, 1.8 Amp maximum
PPS 80E (MBT 201E System)	-	Version operates on 196-264 VAC, 50 Hz. 138 Watts, 0.6 Amp typical; 199 Watts, 0.9 Amp maximum

VACUUM AND AIR

Measurements at front panel **SNAP-VAC** and Controllable **PRESSURE** Ports of power source.

Vacuum Rise Time:	Evacuates 33 cc (2 cubic inch) volume to 25 cm Hg. (10 in. Hg.) in 200 ms.
Vacuum:	51 cm Hg. (20 in. Hg.) (nominal).
Pressure:	.48 Bar (7 P.S.I.) (nominal, "**MAX**" setting).
Air Flow:	13 SLPM (0.46 SCFM) maximum.

ENVIRONMENTAL REQUIREMENTS

Ambient Operating Temperature:	0°C to 50°C (32°F to 120°F).
Storage Temperature:	-40°C to 100°C (-40°F to 212°F).

PHYSICAL PARAMETERS

Size (all systems):	13.5 cm H X 16.5 cm W X 20.3 cm D (5.3 in. H X 6.5 in. W X 8.0 in. D)
Weight (all systems):	PPS 75/J/E - 3.7 kg. (8.1 lbs.) PPS 80/J/E - 3.7 kg. (8.1 lbs.)

TEMPERATURE SPECIFICATIONS

Tip Temperature Range:	232°C to 482°C (450°F to 900°F), nominal.
Accuracy:	±5% of control setting
Tip Temperature Stability:	±1.1°C (2°F) at idle from Set Tip Temperature.

NOTE

True minimum and maximum Operating Tip Temperatures may vary depending on handpiece & tip selection.

EOS/ESD

Tip-To-Ground Resistance:	Less than 2 ohms.
AC Leakage:	Less then 2 millivolts RMS from 50Hz to 500Hz, min.

GENERAL INFORMATION

CAPABILITIES

All capabilities are dependent upon the use of the appropriate Functional Accessories or Work Aids. Available SensaTemp handpieces and their associated assembly and repair functions are listed below (a manual is provided separately with each handpiece which describes the applications and recommended procedures for that particular tool).

SP-2 Sodr-Pen Soldering Iron - Standard handpiece on MBT 201, MBT 201J & MBT 201E systems. Provides a wide range of SMD and thru-hole installation and removal capability as well as unsurpassed thermal performance on heavy, multilayer thru-hole assemblies at safe, lower working temperatures. A wide variety of 3/16" shank, quick change thru-hole and SMD tips (for chip components, SOTs, SOICs and other components) are available.

SP-1 Sodr-Pen Soldering Iron - Uses 1/8" shank tips and features a slimmer, more compact heater than the SP-2 Sodr-Pen for easier access on densely populated assemblies.

SX-70 Sodr-X-Tractor Handpiece - Standard handpiece on MBT 201, MBT 201J, MBT 201E, MBT 101, MBT 101J & MBT 101E systems. Provides thermally enhanced thru-hole desoldering on heavy multilayer assemblies, especially during continuous use. With the unique Flo-D-Sodr tip, the Sodr-X-Tractor performs safe, continuous SMT land cleaning and preparation. The slim-line, pencil-grip design and finger-actuated vacuum switch allow easy use and manipulation in tight places.

TT-65 ThermoTweez Handpiece - Provides safe, one-handed reflow and removal of PLCCs, LCCCs, chip components and other surface mount devices. Its high thermal capacity and targeted heat quickly removes large SMDs without damage to the board or adjacent components, even on heavy, multilayer assemblies. The unique, vertically oriented design and a wide variety of quick change tips easily reach into tight work areas for safe SMD removal.

TP-65 ThermoPik Handpiece - Provides safe, one-handed reflow and removal of a wide variety of PQFPs and FlatPacks in just seconds. The high thermal efficiency design targets controlled SensaTemp heat directly at the solder joints, away from sensitive substrate areas and adjacent components. The ThermoPik's self-adjusting integral vacuum pick and unique design provide easy, one-handed operation.

TJ-70 Mini ThermoJet Handpiece - Provides safe, rapid installation of SMDs including chip components, SOTs, SOICs, PLCCs, LCCCs and FlatPacks. The slim-line design and precision focused air flow lets you easily target controlled heat right at the solder joints without damaging the board or adjacent components. A finger-actuated air switch and SensaTemp control provide safe, "on-demand" capability without constant running of the air pump.

NOTE

The MBT 101/J/E and MBT 201/J/E products feature PACE's unique SensaTemp closed loop temperature management system which will function only with the SenaTemp handpieces listed above. Do not attempt to use any other handpiece. Likewise, use SensaTemp handpieces on only those systems with an SR-3 or SR-4 rating (marked on front panel of power source). These include other MBT systems (MBT 101, MBT 201 and higher) and all ST series systems.

PRODUCT APPLICATION

These products are very versatile and may be used to satisfy a variety of application requirements. If you require assistance in the use of this product for your particular application, contact your local authorized PACE distributor or call PACE Applications Engineering at Tel. # (301) 490-9860, Fax # (301) 604-9215.

GENERAL INFORMATION

PARTS IDENTIFICATION

1. **POWER SWITCH** - Turns system ON ("1") and OFF ("0"); controls input power to system.
2. **CH 1 VARIABLE TEMPERATURE CONTROL** - Allows the operator to adjust the tip temperature for handpiece/tip combination connected to channel 1.
3. **CH 2 VARIABLE TEMPERATURE CONTROL (MBT 201/J/E Systems Only)** - Allows the operator to adjust the tip temperature for handpiece/tip combination connected to channel 2.
4. **CH 1 POWER RECEPTACLE** - Provides power, tip ground, sensing circuitry and finger switch connection from MBT system to the handpiece connected to channel 1.
5. **CH 2 POWER RECEPTACLE (MBT 201/J/E Systems Only)** - Provides power, tip ground, sensing circuitry and finger switch connection from MBT system to the handpiece connected to channel 2.
6. **CH 1 LED** - Green LED provides visual indication of duty cycle control of channel 1. Indicator lights as power is applied to the connected handpiece.
7. **CH 2 LED (MBT 201/J/E Systems Only)** - Green LED provides visual indication of duty cycle control of channel 2. Indicator lights as power is applied to the connected handpiece.
8. **SNAP-VAC PORT** - Quick connect fitting which provides quick-rise vacuum for Sodr-X-Tractor or ThermoPik handpieces.
9. **CONTROLLABLE PRESSURE PORT** - Quick connect fitting with adjustable valve which provides variable air flow for the Mini ThermoJet handpiece.
10. **EARTH GROUND RECEPTACLE** - Provides positive earth ground to which a ground cable can be connected from the workpiece or work surface as part of a static control program.
11. **POWER CORD** - Provides main power to system from AC outlet to AC Power Receptacle.
12. **AC POWER RECEPTACLE/FUSE HOLDER** - Receptacle for providing power to the system from AC outlet through Power Cord, and location of fuse which protects system from overcurrent conditions.
13. **FUSE** - Provides overload protection for MBT system.
14. **FOOT PEDAL RECEPTACLE** - Input for foot pedal (optional) which actuates vacuum or pressure to the air-operated handpieces.

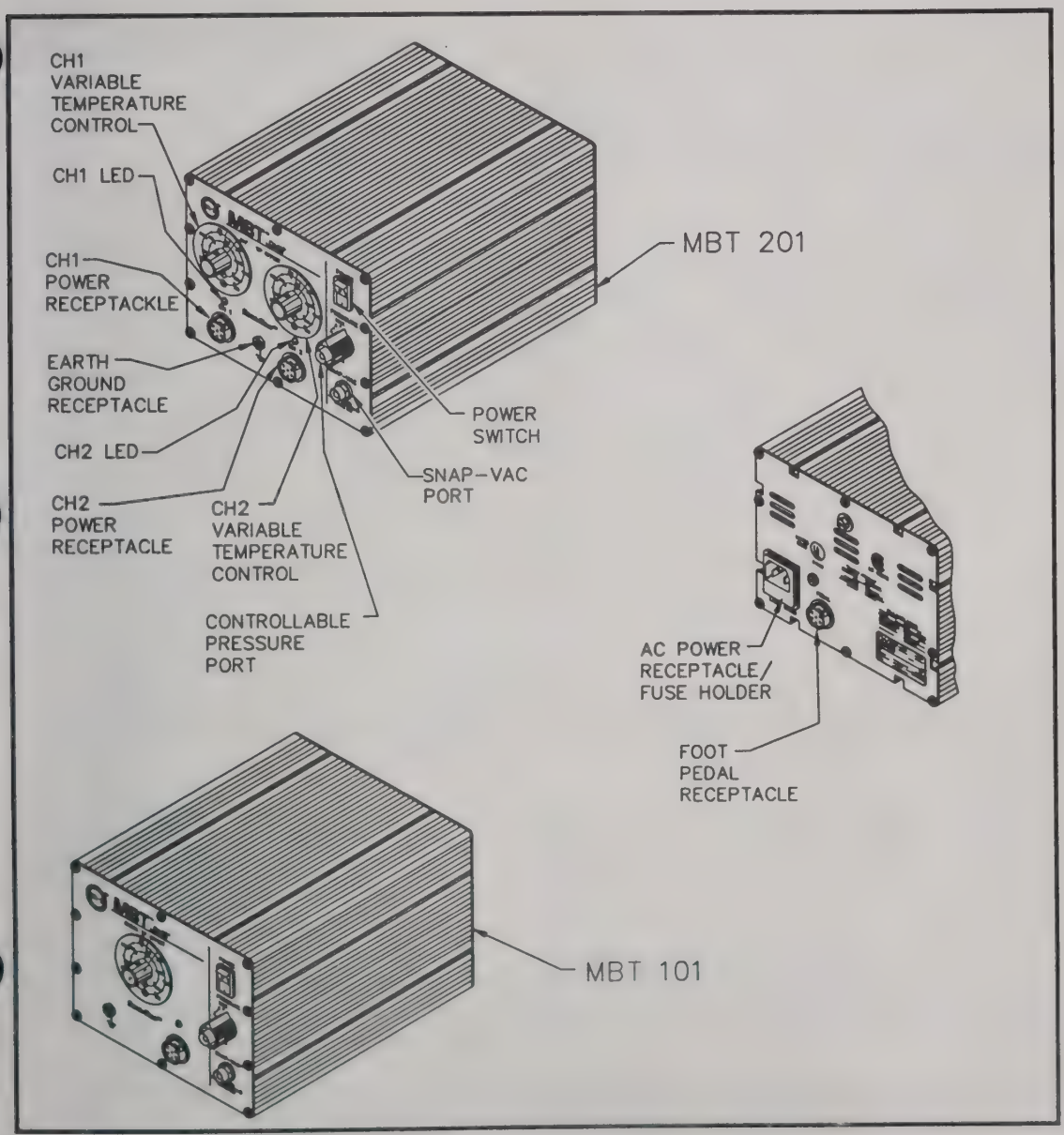


Figure 1. Parts Identification

SAFETY

The purpose of this "SAFETY" section is to inform users of the heading guidelines used in this manual to indicate special Notes, Cautions, Warnings or Dangers. Also included are recommended precautions which must be observed when operating or servicing this product.

HEADING GUIDELINES

PACE adheres to the following Heading Guidelines (based on OSHA guidelines) when listing special information or precautions to be taken. Especially important are all procedures and practices which, if not strictly observed, could result in injury or loss of life.
These "NOTES", "CAUTIONS","WARNINGS" and "DANGERS" are inserted in this manual whenever deemed necessary. They appear in a blocked off form with double outline and a shaded background to highlight the information as shown below.

NOTE

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

NOTE

Used to indicate a statement of company recommendation or policy. The message may relate directly or indirectly to the safety of personnel or protection of property. NOTE is not associated directly with a hazard or hazardous situation and is not used in place of "CAUTION", "WARNING" or "DANGER".

CAUTION

Used to indicate a hazardous situation which may result in minor or moderate injury. May also be used to alert personnel to conditions, procedures and practices which, if not observed, could result in damage to or destruction of the product or other equipment.

WARNING

Used to define additional information that if not closely followed might result in serious damage to equipment and represent a potential for serious personnel injury.

DANGER

Defines additional information that if not closely followed might result in severe personnel injury or death. Danger is not used for property damage unless personal injury risk is present.

PRECAUTIONS

The following are general safety precautions which personnel must understand and follow when using or servicing this product. These precautions may or may not be included elsewhere in this manual.

USEAGE PRECAUTIONS

CAUTIONS

1. SensaTemp handpiece heaters and installed tips are hot when handpiece is powered on. DO NOT touch either the heater or tip. Severe burns may result! Always store handpiece in the appropriate cubby when not in use.
2. Always use this system in a well ventilated area. A fume extraction system such as those marketed by PACE are highly recommended to protect personnel from solder flux fumes.
3. Exercise proper precautions when using chemicals (e.g., solder paste). Refer to the Material Safety Data Sheet (MSDS) supplied with each chemical and adhere to all safety precautions recommended by the manufacturer.

NOTES

1. The solder collection chamber in the PACE Sodr-X-Tractor is made of glass. Never remove this chamber using pliers. Breakage of the chamber may result. Always remove using the procedures recommended by PACE in the associated handpiece manual.
2. The front end (heater end) of the glass solder collection chamber in the PACE Sodr-X-Tractor is hot when the handpiece is in use. When removing the chamber for cleaning, grip the chamber at the rear seal. Never touch the front end of the glass chamber with bare hands. Allow the chamber to cool before cleaning.
3. Always store any connected handpiece in the appropriate Tip & Tool Stand or hot cubby.

SERVICING PRECAUTIONS

DANGERS

POTENTIAL SHOCK HAZARD - Repair procedures performed on this product should be performed by qualified service personnel only. Line voltage parts will be exposed when equipment is disassembled. Service personnel must avoid contact with these parts when troubleshooting the power source.

NOTES

Refer to the MBT 201, MBT 101, ST 50 Service Manual (P/N 5050-0340) whenever service is required.

To insure continued peak performance, use genuine PACE replacement parts.

SET-UP

SYSTEM

Using Figures 1 thru 4 as a guide, set up the MBT 201 or MBT 101 system using the following steps.

1. Store the shipping container(s) in a convenient location. Reuse of these containers will prevent damage if you store or ship the system.

2. Place Power Switch in the "Off" or "0" position.

3. Position the system on a convenient bench.

4. Plug the Power Cord into AC Power Receptacle/Fuse Holder at the rear panel of the system.

IMPORTANT

The AC supply receptacle must be checked to insure proper grounding before initial system operation.

5. Assemble and attach Tip & Tool Stand(s) to the power source. Assembly instructions are enclosed with each stand.

6. If you have purchased the optional Tip & Temperature Selection System Chart Holder, attach to the top of the power source using the supplied instructions.

7. Install the Tip & Temperature Selection System Charts booklet onto Chart Holder. This booklet is supplied with each system.

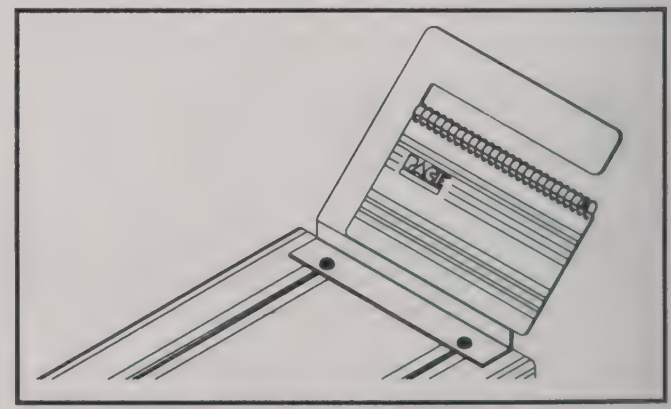


Figure 2. Tip & Temperature Chart Holder (Optional)

8. Place handpiece(s) into the Tip & Tool Stand(s).

9. Using Figure 3 as a guide, connect handpiece(s) connector(s) to power source Power Receptacle(s) in the following manner:

   a) With the Connector Key end facing the power source, turn the Locking Ring fully counterclockwise.

   b) Align the Connector Key with the Receptacle Keyway.

   c) Insert the connector into the Power Receptacle.

   d) Turn the Locking Ring fully clockwise to lock in place.

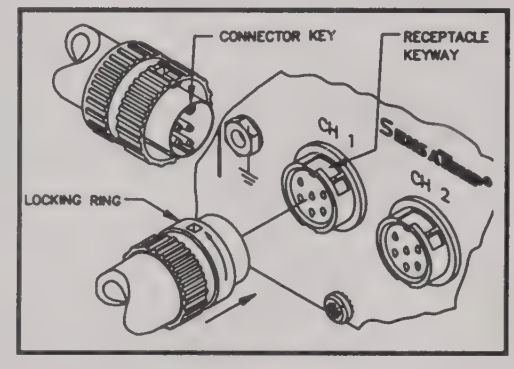


Figure 3. Handpiece Connection

10. To avoid confusion among handpieces on MBT 201 systems, PACE recommends the use of colored markers (P/N 6993-0136 Cable Marker Kit) to identify the particular handpiece power cable and/or air hose. Attach any two like colored markers, one to each end of the handpiece power cable or air hose. Select and use a different color marker for each handpiece.

11. Insert foot pedal connector plug into Foot Pedal Receptacle on rear panel of power source if purchased.

12. Plug the prong end of the Power Cord into a convenient three wire grounded outlet.

13. Place **POWER** Switch in the "On" or "1" position. The system is now ready for operation.

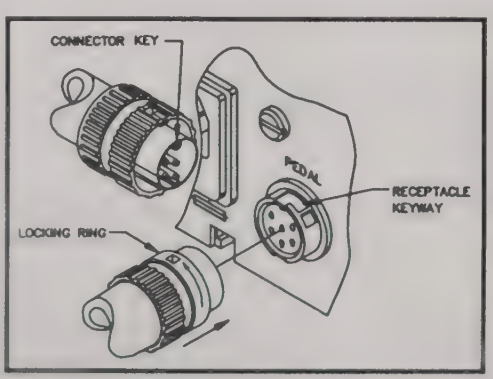


Figure 4. Foot Pedal Connection

HANDPIECE VACUUM/PRESSURE

AIR HOSE CONNECTION

There are two methods of attaching the Air Hose from the PACE power source to an air handpiece. Select the method which best suits your needs. The Quick Connect Method is best suited for configurations where multiple air handpieces may be in use. The Traditional Method is best suited for single air handpiece configurations.

CAUTION
Regardless of connection method, ensure that only one Air Hose is connected to the **SNAP-VAC** or Controllable **PRESSURE** Port at one time. Attachment to both ports simultaneously will cause a deterioration of performance.

QUICK CONNECT METHOD

To set up each air handpiece for the quick connect operation, perform the following steps.

1. Attach a 1 inch length (2.5cm) of clear pvc Air Hose (P/N 1325-0003-07) to the metal tube in the back of each handpiece.

2. To the other end of the 1 inch (2.5cm) clear pvc Air Hose attach a female quick connect hose mount Fitting (P/N 1259-0086).

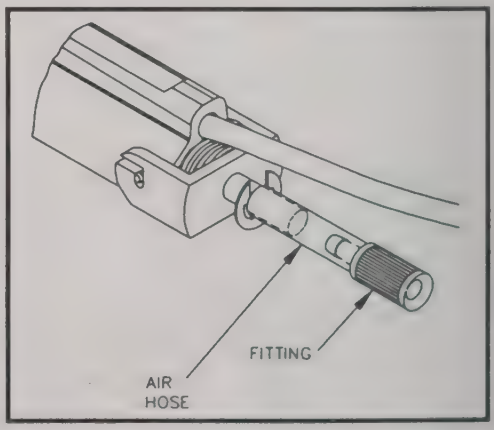


Figure 5. Handpiece Quick Connect Hose

3. Secure this short Air Hose to the handpiece power cable with one cable clip (P/N 1321-0085-01).

4. Prepare a quick connect Air Hose by inserting a metal hose clamp (P/N 1211-0036, standard on MBT 201 systems) & a male quick connect hose mount Fitting (P/N 1259-0087) into each end of a 54 inch (137cm) length of Air Hose. Push the ridged ends of the Fittings into the hose; slide & twist the metal hose clamps over the connections to secure. You may already have this piece if you have other quick disconnect handpieces configured.

5. Prepare a VisiFilter by connecting a 1 inch (2.5cm) length of clear pvc Air Hose to each side of the VisiFilter. To the free end of the Air Hose connected to the FLOW IN side of the VisiFilter, insert a female quick connect hose mount Fitting (P/N 1259-0086). Connect a male quick connect hose mount Fitting (P/N 1259-0087) to the free end of the remaining Air Hose. Insert the VisiFilter male quick connect hose mount Fitting into the **SNAP-VAC** Port of the Power Source. Connect the 54 inch (137cm) length of Air Hose to the female quick connect hose mount Fittings on the VisiFilter and the handpiece.

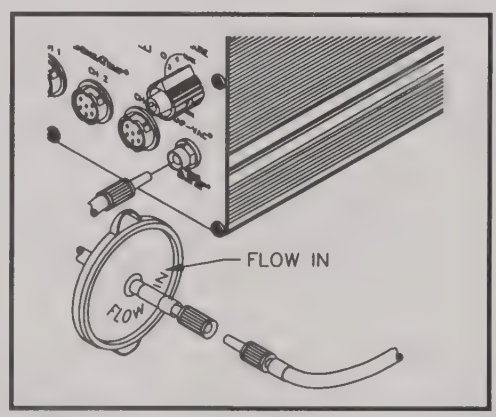


Figure 6. VisiFilter Set-Up

TRADITIONAL METHOD

1. Connect the 54 inch (137cm) length of Air Hose to the metal tube in the back of each air handpiece.

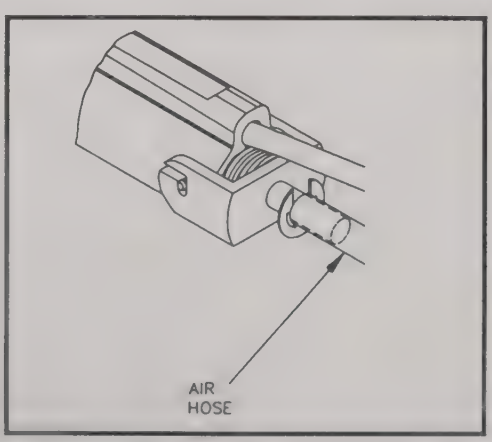


Figure 7. Traditional Air Hose Connection

TRADITIONAL METHOD CONT'D

2. Insert a male quick connect hose mount Fitting (P/N 1259-0087) to the free end of the 54 inch (137cm) length of Air Hose.

3. Secure the Air Hose to the handpiece power cable with cable clips (P/N 1321-0085-01).

4. Prepare a VisiFilter by connecting a 1 inch (2.5cm) length of clear pvc Air Hose to each side of the VisiFilter. To one of the Air Hose ends connect a male quick connect hose mount Fitting (P/N 1259-0087). Attach a female quick connect hose mount Fitting (P/N 1259-0086) to the other VisiFilter hose. Connect the 54 inch (137cm) length of Air Hose to the female quick connect hose mount Fitting. Attach the remaining end of the VisiFilter (female quick connect hose mount Fitting) to the power source **SNAP-VAC** Port.

TIP & TEMPERATURE SELECTION

With any heating system, actual tip temperatures can differ greatly from temperature control settings. The PACE "Tip & Temperature Selection System" allows you to select and maintain a True Tip Temperature for any size and type of tip using the appropriate Tip Offset compensation value.
PACE's unique Tip & Temperature Selection System includes Procedural Instructions, a Customer Log and Charts for each handpiece. Follow the procedure given in the card marked "Introduction" to obtain the desired True Tip Temperature. Listed below are the instructions pertinent to your particular system.

PROCEDURE: Select the appropriated Handpiece Chart for your application based on component type and/or procedure (e.g., SMD removal, thru-hole soldering, etc.) and identify the correct tip. Install tip into handpiece and follow the procedure below.

1. Select a TRUE TIP TEMP listed on the Chart.*
2. Adjust the Variable Temperature Control Knob for the channel powering the handpiece to the corresponding DIAL SETTING. The tip will idle at the True Tip Temp.

*To set a TRUE TIP TEMP other than those listed, estimate an appropriate DIAL SETTING based upon the values shown on the Chart.

NOTE: The Variable Temperature Control Knob will indicate the DIAL SETTING. Please remember the following relationships when setting or monitoring tip temperature on these systems:
DIAL SETTING = TRUE TIP TEMP + TIP OFFSET
TRUE TIP TEMP = DIAL SETTING - TIP OFFSET

VISIFILTER ELEMENT REPLACEMENT

Follow the procedure listed below to replace the VisiFilter element when it becomes clogged or discolored.

1. Disconnect the handpiece air hose by gently turning and pulling the coupled Fittings.
2. Disconnect the Visifilter and hose assembly from the Power Source by gently turning and pulling the male Fitting inserted into the **SNAP-VAC** Port.
3. Disconnect VisiFilter from both attached 1 inch air hoses by gently turning and pulling the VisiFilter while holding each of the hoses.
4. Separate the 2 plastic housing halves of the VisiFilter in the following manner.
   a) Grasp the VisiFilter in the palm of the hand with the Male Nib (air hose connection) marked "FLOW IN" facing you.
   b) Pull against one of the Wing Tabs while pulling on the Male Nib with the free hand to open the interconnection of the plastic housings at that Wing Tab.
   c) Pull against the second Wing Tab while pulling on the Male Nib to open the remaining interconnection and separate the plastic housings.
5. Remove the old or discolored Element and discard.
6. Insert the replacement VisiFilter Element into the housing marked "FLOW IN". Center the Element in the housing well.
7. Squeeze the 2 plastic housing halves together using 4 plastic Bumps on the housing marked "FLOW OUT" as pressure points. The 2 plastic housings will snap together and lock the VisiFilter Element in position.
8. Reconnect the 1 inch air hoses (removed in step 3) to the VisiFilter.
9. Attach VisiFilter and hose assembly to Power Source by inserting male Fitting into the **SNAP-VAC** Port.

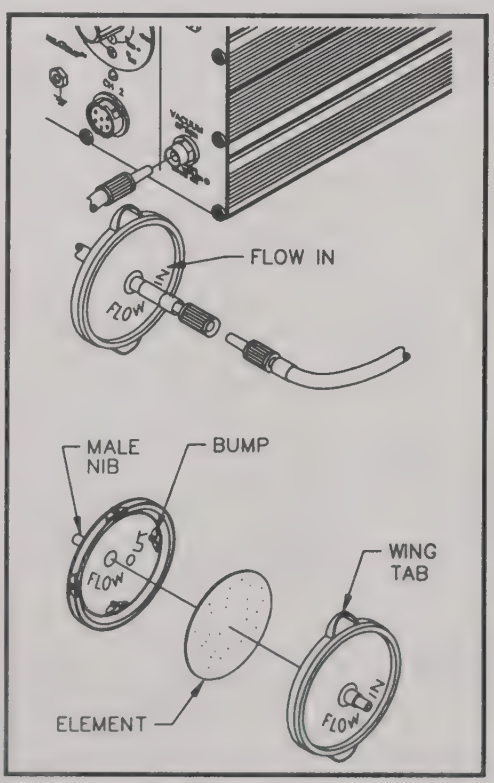


Figure 8. VisiFilter Element Replacement

CORRECTIVE MAINTENANCE

HANDPIECES

The following "Heater Assembly Checkout Procedures" are applicable to all PACE SensaTemp handpieces except for the TT-65 ThermoTweez handpiece. Refer to either of the TT-65 manuals (P/N 5050-0300 or 5050-0336) for troubleshooting procedures pertinent to that handpiece.

Perform the "Heater Assembly Checkout Procedures" with the handpiece (and heater) at room temperature. If the handpiece is warm, resistance readings will be different from those shown.

SYMPTOM	CHECKOUT PROCEDURE	CAUSE	SOLUTION	HEATER SPECIFICATIONS
No heat	Check resistance - Pin 2 to Pin 5. Refer to "Heater Specifications" column. If resistance is high -	Open Heater	Replace Heater Assembly.	SX-70 = 8 - 10 ohms SP-1 = 10 - 12 ohms SP-2 = 8 - 10 ohms TP-65 = 9 - 11 ohms TJ-70 = 6 ohms
	Check resistance - Pin 3 to Pin 6. If circuit reads open -	Open Sensor	Replace Heater Assembly.	
Handpiece overheating	Check resistance - Pin 3 to Pin 6. Resistance should be 110 ohms. If circuit resistance reads less than 105 ohms -	Shorted Sensor	Replace Heater Assembly.	
Fuse blows when unit is turned on.	Check resistance - Pin 2 to Pin 5. Refer to "Heater Specifications" column. If resistance is low -	Solder short in Handpiece.	Remove Short. Replace Heater Assembly & Fuse F1.	
		Shorted Heater	Replace Heater Assembly & Fuse F1.	
No Ground on Tip.	Check resistance - Pin 4 to a NEW Tip. Resistance should be less than 2 ohms. If not -	Oxidation buildup in Heater Bore.	Clean Heater Bore using appropriate wire brush.	
		Defective Heater	Replace Heater Assembly.	

Table I. Heater Assembly Checkout Procedures

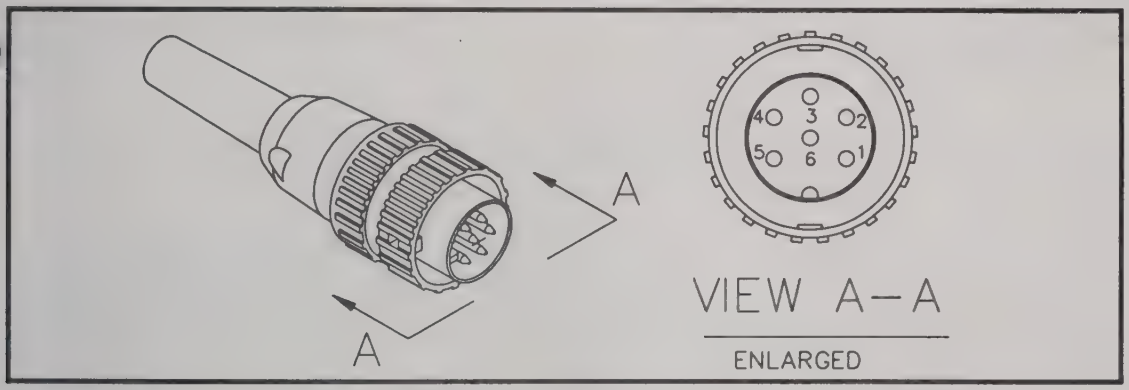


Figure 9. Connector Plug Wiring

POWER SOURCE

Most malfunctions are simple and easy to correct. Refer to the table shown below to clear these malfunctions.

SYMPTOM	PROBABLE CAUSE	SOLUTION
No power to system.	Blown Fuse (F1)	Replace fuse F1 located on rear of Power Source in the AC Receptacle/Fuse Holder.
No heat on handpiece. Other handpieces work on Power Source channel.	Defective Heater	See Table 1 or refer to handpiece Manual.
No heat on handpiece. Other handpieces do not work on Power Source channel.	Defective control circuit.	Contact PACE Customer Service.

Table II. Power Source Corrective Maintenance

REPLACEMENT PARTS

POWER SOURCE

Listed below are the replacement parts which may be ordered directly from PACE sales or through your local authorized PACE distributor. Refer to Figure 1, Page 9. To obtain any parts other than those listed below, contact PACE Customer Service directly at Tel. # (301) 490-9860 or Fax # (301) 604-9215.

ITEM NO.	DESCRIPTION	PACE PART NUMBER		
		MBT 201 MBT 101	MBT 201J MBT 101J	MBT 201E MBT 101E
1	Power Switch	1157-0052	1157-0052	1157-0052
2	AC Power Receptacle/Fuse Holder	1207-0151	1207-0151	1207-0151
3	Fuse (F1), 1.25A (MBT 201, MBT 101)	1159-0217	N/A	N/A
	1.25A (MBT 101J)	N/A	1159-0251	N/A
	1.6A (MBT 201J)	N/A	1159-0256	N/A
	0.63A (MBT 201E, MBT 101E)	N/A	N/A	1159-0214
4	Service Manual	5050-0340	5050-0340	5050-0340

Table III. Power Source Replacement Parts

ACCESSORY TRAY, MBT 201/J/E

Listed below are items included in MBT 201, MBT 201J and MBT 201E System Accessory Trays.

ITEM NO.	DESCRIPTION	PACE PART NUMBER MBT 201 MBT 201J	MBT 201E
1	SX-70 Sodr-X-Tractor Handpiece	6010-0077	6010-0077
2	SP-2 Sodr-Pen Soldering Iron	6025-0014	6025-0014
3	Operation & Maintenance Manual	5050-0269	5050-0269
4	Tubing, Silicone, Translucent, 54" Length	1342-0001-13	1342-0001-13
5	VisiFilter	1309-0028	1309-0028
	VisiFilter Replacement Elements (optional item)	1309-0027-P50	1309-0027-P50
6	Bristle Brush, Glass Chamber Cleaning	1127-0002	1127-0002
7	Power Cord	1332-0094	1332-0093
8	Tubing, Clear PVC, 1" Length (Qty. 2)	1325-0003-07	1325-0003-07
9	Wire Brush, 3/16" Dia.	1127-0014	1127-0014
10	Wire Brush, 1/8" Dia.	1127-0006	1127-0006
11	Tip Cleaning Kit	6993-0151	6993-0151
12	AdapTip Kit (1/8" Tip to 3/16" Shank)	1360-0083-P1	1360-0083-P1
13	Tip & Temp. Selection System Charts (booklet)	5050-0251	5050-0251
14	SP Tip & Tool Stand	6019-0043	6019-0043
15	SX Tip & Tool Stand	6019-0044	6019-0044

Table IV. MBT 201, MBT 201J, MBT 201E Accessory Tray Replacement Parts

REPLACEMENT PARTS

ACCESSORY TRAY, MBT 101/J/E

Listed below are items included in MBT 101, MBT 101J and MBT 101E System Accessory Trays.

ITEM NO.	DESCRIPTION	PACE PART NUMBER	
		MBT 101 MBT 101J	MBT 101E
1	SX-70 Sodr-X-Tractor Handpiece	6010-0077	6010-0077
2	Operation & Maintenance Manual	5050-0269	5050-0269
3	Tubing, Silicone, Translucent, 54" Length	1342-0001-13	1342-0001-13
4	VisiFilter	1309-0028	1309-0028
	VisiFilter Replacement Elements (optional item)	1309-0027-P50	1309-0027-P50
5	Bristle Brush, Glass Chamber Cleaning	1127-0002	1127-0002
6	Power Cord	1332-0094	1332-0093
7	Tubing, Clear PVC, 1" Length (Qty. 2)	1325-0003-07	1325-0003-07
8	Wire Brush, 3/16" Dia.	1127-0014	1127-0014
9	Wire Brush, 1/8" Dia.	1127-0006	1127-0006
10	AdapTip Kit (1/8" Tip to 3/16" Shank)	1360-0083-P1	1360-0083-P1
11	Tip Cleaning Kit	6993-0151	6993-0151
12	SX Tip & Tool Stand	6019-0044	6019-0044
13	Tip & Temp. Selection System Charts (booklet)	5050-0251	5050-0251

Table V. MBT 101, MBT 101J, MBT 101E Accessory Tray Replacement Parts

ACCESSORY KIT, MBT 201/J/E

Listed below are items included in MBT 201, MBT 201J and MBT 201E System Accessory Kits.

ITEM NO.	DESCRIPTION	PACE PART NUMBER		
		MBT 201	MBT 201J	MBT 201E
1	Tip Tool	1100-0206	1100-0206	1100-0206
2	Desoldering Tip, 3/16" Shank, .040 I.D.	1121-0342	1121-0342	1121-0342
3	Desoldering Tip, 1/8" Shank, .040 I.D.	1121-0254	1121-0254	1121-0254
4	Desoldering Tip, 1/8" Shank, Angled, .040 I.D.	1121-0262	1121-0262	1121-0262
5	Soldering Tip, 1/8" Chisel	1121-0337	1121-0337	1121-0337
6	Soldering Tip, 1/32" Conical	1121-0336	1121-0336	1121-0336
7	Sodr-X-Tractor Filter	1309-0018	1309-0018	1309-0018
8	Holder, Tube To Wire (pkg. of 6)	1321-0085-01	1321-0085-01	1321-0085-01
9	Hose Clamp, Metal (qty. 2)	1211-0036	1211-0036	1211-0036
10	Male Quick Connect Hose Mount (qty. 2)	1259-0087	1259-0087	1259-0087
11	Female Quick Connect Hose Mount	1259-0086	1259-0086	1259-0086
12	Fuse, 1.25A. Time Lag (MBT 201)	1159-0217	N/A	N/A
	1.6A. Time Lag (MBT 201J)	N/A	1159-0256	N/A
	0.63A. Time Lag (MBT 201E)	N/A	N/A	1159-0214

Table VI. MBT 201/J/E Accessory Kits

REPLACEMENT PARTS

ACCESSORY KIT, MBT 101/J/E

Listed below are items included in MBT 101, MBT 101J and MBT 101E System Accessory Kits.

ITEM NO.	DESCRIPTION	PACE PART NUMBER		
		MBT 101	MBT 101J	MBT 101E
1	Tip Tool	1100-0206	1100-0206	1100-0206
2	Desoldering Tip, 3/16" Shank, .030 I.D.	1121-0367	1121-0367	1121-0367
3	Desoldering Tip, 3/16" Shank, .040 I.D.	1121-0342	1121-0342	1121-0342
4	Desoldering Tip, 3/16" Shank, .060 I.D.	1121-0368	1121-0368	1121-0368
5	Desoldering Tip, 1/8" Shank, .030 I.D.	1121-0253	1121-0253	1121-0253
6	Desoldering Tip, 1/8" Shank, .040 I.D.	1121-0254	1121-0254	1121-0254
7	Desoldering Tip, 1/8" Shank, Angled, .030 I.D.	1121-0261	1121-0261	1121-0261
8	Desoldering Tip, 1/8" Shank, Angled, .040 I.D.	1121-0262	1121-0262	1121-0262
9	Sodr-X-Tractor Filter	1309-0018	1309-0018	1309-0018
10	Holder, Tube To Wire (pkg. of 6)	1321-0085-01	1321-0085-01	1321-0085-01
11	Male Quick Connect Hose Mount (qty. 2)	1259-0087	1259-0087	1259-0087
12	Female Quick Connect Hose Mount	1259-0086	1259-0086	1259-0086
13	Fuse, 1.25A. Time Lag (MBT 101/J)	1159-0217	1159-0251	N/A
	0.63A. Time Lag (MBT 101E)	N/A	N/A	1159-0214

Table VII. MBT 101/J/E Accessory Kits

MANUAL IMPROVEMENT & COMMENT

Instructions

1. Duplicate this form and submit comments on the copy. Keep the original to make future comments.
2. Complete all requested information.
3. Submit completed form to:

PACE Incorporated
Applications Engineering Fax: (301) 604 - 9215
9893 Brewers Court
Laurel MD 20723-1990 U.S.A.

Document Nbr: **5050-0269**	Revision Level: **F**	Date of Submission:

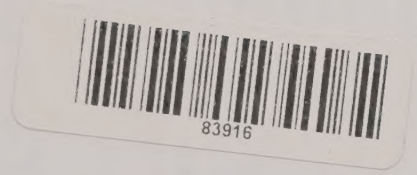
Nature of Change (Identify page and paragraph and include proposed rewrite, if possible.)

Reason for Recommendation

Submitter:

Name:	Company or Organization:
Mailing Address:	Telephone (Include Area Code) Voice: Fax:

Thank you for your comments; they are greatly appreciated!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